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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,663	02/20/2002	Tong Zhang	10006275-1	7067

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HEWLETT-PACKARD COMPANY  
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EXAMINER

ALAVI, AMIR

ART UNIT PAPER NUMBER

2621

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/079,663

**Applicant(s)**

ZHANG, TONG

**Examiner**

Amir Alavi

**Art Unit**

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-11 and 13-20 is/are rejected.
- 7) ☒ Claim(s) 4 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20020326</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### **Specification**

- The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### **Claim Rejections - 35 USC § 103**

- The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- Claims 1-2, 5-10, 14-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. (USPN 4,845,764) in view of Gallagher (USPN 6,400,848 B1).

Regarding claim 1, Ueda et al., disclose: transforming a captured image into a binary image (please note, figure 2, element 39, in correlation to column 3, line 53); searching said binary image to detect a plurality of edges of said imaged document (please note, figure 2, element 41 and figure 9, element 101); and analyzing said detected plurality of edges to determine at least one corner associated with said imaged document (please note, figure 9, elements 102-104); wherein said transforming, searching and analyzing are performed by programmable logic associated with a processor-based system (please note, column 3, line 45. As indicated a calculation circuit).

However, Ueda et al., do not specifically disclose, wherein the captured image is one of a digital image.

On the other hand, Gallagher, in the same field of endeavor, discloses, wherein the captured image is one of a digital image. ( please note, column 2, line 48. As indicated a captured digital image is being converted to a binary image).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to utilize this digital image of Gallagher, in Ueda et al.'s invention, because having a digital image would be a much simpler and faster process in converting it to the desired binary image.

Regarding claim 2, Gallagher, discloses, performing perspective adjustment utilizing at least one corner (please note, figure 1, in correlation to column 2, lines 11-13).

Regarding claim 5, Ueda et al., disclose, wherein analyzing a respective magnitude of slope associated with each of said plurality of edges (please note, column 6, lines 1-12).

Regarding claim 6, Ueda et al., disclose, wherein searching for a turning point in each of said plurality of edges (please note, figure 5a, in correlation to column 6, lines 6-7. As indicated the corners are recognized as normal corners of 90 degrees).

Regarding claim 7, Ueda et al., disclose, wherein assigning detected turning points as ones of a plurality of corners (please note, figure 5a, in correlation to column 6, lines 6-7. As indicated the corners are recognized as normal corners of 90 degrees).

Regarding claim 8, Ueda et al., disclose, wherein averaging locations associated with end points of ones of said plurality of edges to determine ones of a plurality of corners (please note, figure 4a, in correlation to column 4, lines 61-68. As indicated detection of a corner using the average of the boundary angle difference corresponding to corners A-F).

Regarding claim 9, arguments analogous to those presented for claim 1, above, are applicable.

Regarding claims 10 and 18, arguments analogous to those presented for claim 2, above, are applicable.

Regarding claims 14 and 19, arguments analogous to those presented for claim 5, above, are applicable.

Regarding claim 16, Gallagher, discloses, wherein the system is selected from, a personal computer, a PDA and a digital camera (please note, column 5, line 12).

Regarding claims 15 and 20, arguments analogous to those presented for claim 7, above, are applicable.

- Claims 3, 11, 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. (USPN 4,845,764) in view of Gallagher (USPN 6,400,848 B1) and further in view of Winkelman (USPN 5,420,704).

Regarding claim , Ueda et al., disclose: transforming a captured image into a binary image (please note, figure 2, element 39, in correlation to column 3, line 53); searching said binary image to detect a plurality of edges of said imaged document (please note, figure 2, element 41 and figure 9, element 101); and analyzing

said detected plurality of edges to determine at least one corner associated with said imaged document (please note, figure 9, elements 102-104); wherein said transforming, searching and analyzing are performed by programmable logic associated with a processor-based system (please note, column 3, line 45. As indicated a calculation circuit). On the other hand, Gallagher, in the same field of endeavor, discloses, wherein the captured image is one of a digital image. ( please note, column 2, line 48. As indicated a captured digital image is being converted to a binary image).

However, neither, Ueda et al., nor, Gallagher, specifically disclose, wherein determining a luminance threshold associated with the digital image.

On the other hand, Winkelman, in the same field of endeavor, discloses, wherein determining a luminance threshold associated with the digital image. (please note, figure 5, in correlation to column 12, lines 66-68 and column 13, lines 1-10. As indicated a typical histogram with definitions for the luminance threshold).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to utilize this luminance threshold of Winkelman, in Ueda et al. and Gallagher's invention, because as disclosed on column 9, lines 20-23, such luminance threshold utilization will determine if the corners fall within the selected luminance region).

Regarding claim 11, arguments analogous to those presented for claim 3, above, are applicable.

Regarding claim 13, Winkelman, discloses a histogram of luminance values of said digitally captured image to determine said luminance threshold (please note, figure 5, in correlation to column 12, lines 66-68 and column 13, lines 1-10).

Regarding claims 17, arguments analogous to those presented for claims 1 and 3, above, are applicable.

### **Allowable Subject Matter**

- Claims 4 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
- The following is a statement of reasons for the indication of allowable subject matter: None of the prior art disclose or fairly suggest wherein, a pixel of said binary image equals a logical value of one when a corresponding pixel in said digitally captured image is associated with a value greater than said luminance threshold or a logical value of zero otherwise.

### **Other prior art cited**

- The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bungo et al. (USPN 6,011,635) is pertinent as teaching image reading apparatus and method for correcting a read image.

Pizano et al. (USPN 6,101,274) is pertinent as teaching method and apparatus for detecting and interpreting textual caption in digital video signals.

Otsu et al. (USPN 6,466,693 B1) is pertinent as teaching an image processing apparatus.

Yamazaki et al. (USPN 6,285,800 B1) is pertinent as teaching apparatus and method for processing an image.

Jensen et al. (USPN 6,697,497 B1) is pertinent as teaching boundary identification and characterization through density differencing.

Ohyama (USPN 4,866,783) is pertinent as teaching system for detecting edge of image.

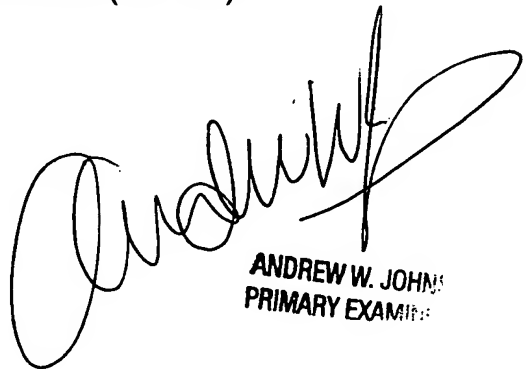
Tanaka et al. (USPN 5,548,415) is pertinent as teaching image processing apparatus.

Nako (USPN 5,774,237) is pertinent as teaching image reading apparatus).

## Contact Information

- Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amir Alavi whose telephone number is 703-306-5913.
- The examiner can normally be reached on Mon-Thu.. 8:00 am thru 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Leo Boudreau can be reached on 703-305-4706.
- The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.
- For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AA  
Group Art Unit 2621  
10 December 2004



ANDREW W. JOHNSON  
PRIMARY EXAMINER